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(54) TOY BUILDING COMPONENT AND SET

(71) I, ARTUR FISCHER, a German Citizen of 7241 Tumlingen, Altheimer Strasse 219, Germany., do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a toy building component and set, and in particular to a component of laminar form.

It is known to join the components of a toy building set by inserting a re-entrant tenon arranged on one component into a re-entrant groove in another component. This results in a firm joint of the components provided, of course, that the re-entrant groove is accessible for the insertion of the re-entrant tenon from at least one side face of the component provided with the re-entrant groove. This type of joint restricts flexible planning in the construction of toy models since a component having a re-entrant groove may have to be positioned so that a re-entrant tenon of another component cannot be aligned, and slid into, such a groove. In order to enable children who are not yet capable of planning in advance to construct toy models by avoiding such occurrences, toy building sets have been developed in which the joints can be effected by clipping a tenon of one component into a corresponding aperture in another component.

Thus, it has been proposed to connect one component having a button-like tenon to another component by clipping the tenon into a corresponding aperture in the second component. To ensure that the two components remain joined after the tenon is pressed into the aperture, it is necessary that the tenon is of re-entrant form and that the material surrounding the aperture of the second component is so resilient that it gives way when the tenon is inserted and

then subsequently expands to regain its original shape and to grip the tenon. Where components are made of material having such a resiliency, however, a disadvantage occurs in that sturdy toy models cannot be constructed. Moreover, the permanent plastic deformation of a component in the region of its aperture leads to material fatigue when a re-entrant tenon is pressed in, which very soon causes stretching of the aperture, so that it is no longer possible for the component to be joined firmly together. Such components thus become useless very quickly.

The present invention provides a toy building component of laminar form and having an aperture through which a re-entrant tenon of another toy building component is insertable to connect the two components, the component being formed with a cut or a slot in a region adjacent the aperture so that the region can bend elastically to permit the head of a re-entrant tenon of another toy building component to pass right through the aperture, the head of the re-entrant tenon being larger than the aperture, and so that the region can then spring back so that the aperture closely surrounds the neck of the re-entrant tenon.

Preferably the slot extends from the aperture and terminates in a further slot transverse thereto, in which case a second slot may extend from the aperture and terminate in a further slot transverse thereto. Advantageously, the longitudinal axes of the two slots extending from the aperture are colinear. Each of the further slots may be formed at right-angles to its respective slot extending from the aperture.

Advantageously, the periphery of the aperture is provided with corrugations parallel to the axis of the aperture.

The present invention further provides a toy building set including first and second

building components, the first building component being as defined above and the second building component having a re-entrant tenon which is insertable into the aperture of the first building component to connect the two components.

Preferably, the tenon of the second building component is formed by a substantially spherical head portion and a substantially cylindrical neck portion.

Two forms of laminar toy building components constructed in accordance with the invention will now be described, by way of example, with reference to the accompanying drawings, in which:—

Fig. 1 is a top plan view of the first form of component connected to another toy building component;

Fig. 2 is a part-sectional side elevation of the arrangement of Fig. 1;

Fig. 3 is a top plan view of the second form of component; and

Fig. 4 is a side elevation of a toy building component suitable for connection to the component of Fig. 3.

Referring to the drawings, Fig. 1 shows a toy building component 1 provided with a number of re-entrant tenons 2 and connected to a toy building component 3 which has apertures 4 into one of which is inserted one of the tenons 2 to interconnect the two components. Each tenon 2 is formed by a substantially spherical head portion 6 and a cylindrical neck portion 5. A slot 7 extends radially away from the opposite ends of diametrically opposed points on the circumference of each aperture 4 and a further slot 8 extends at right-angles to the end of each slot 7. As a result, two pairs of tongues 9a, 9b are produced around each aperture 4.

In order to connect the two components 1 and 3, one of the tenons 2 of the component 1 is inserted into one of the apertures 4 of the component 3. This causes the tongues 9a, 9b to deflect upwardly (as seen in Fig. 1), the roots of the tongues being subject to a bonding strain, which, however, does not result in plastic deformation of the material of the component 3. The deflection of the tongues 9a, 9b results in an affective widening of the aperture 4 so that the spherical head 6 of the tenon 2 can be pushed right through the aperture. The tongues 9a, 9b then spring back resiliently behind the head 6 of the tenon 2 into their initial positions and thus surround the neck 5 of the tenon, the cross-section of which neck corresponds to that of the aperture. Since the head 6 of the tenon 2 is greater in diameter than that of the neck 5 and therefore the aperture 4, a connection is thus achieved which is capable of absorbing relatively small tractive forces in the direction of extraction.

When the tractive forces are relatively large, for example when disconnecting the components 1 and 3, the tongues 9a, 9b are deflected downwardly (as seen in Fig. 1) by the head of the tenon 2 so that the aperture 4 widens again to permit the head of the tenon to pass therethrough. The use of the component 3 results, in a connection which utilises only an elastic deformation and not a plastic deformation of the material in the region of the roots of the tongues 9a, 9b, so that material having fatigue, due to compressive forces of the type is prevalent in known arrangements, is avoided. The quality of the connection is, therefore, hardly affected even with frequent use.

Fig. 3 shows a toy building component 3' which is similar to the component 3 of Figs. 1 and 2 except that the periphery of each aperture 4' is provided with corrugations 10 which are parallel to the axis of the aperture. Similarly, Fig. 4 shows a toy building component 1' which is similar to the component 1 of each tenon 2' of Figs. 1 and 2 except that the neck portion 5' is provided with longitudinal corrugations 10'.

The provision of the corrugations 10 and 10' ensure that the component 1', once connected to the component 3', is restrained against being twisted relatively with respect to the component 3'. Consequently, static models such as crane superstructure, bridges or the like can be erected without the need for additional transverse struts to hold the connections firmly.

The apertures 4, 4' are also suitable for the seating of axles, shafts and the like, so that it is also possible to use the component 3, 3' for erecting movable models.

WHAT I CLAIM IS:—

1. A toy building component of laminar form and having an aperture through which a re-entrant tenon of another toy building component is insertable to connect the two components, the component being formed with a cut or a slot in a region adjacent the aperture so that the region can bend elastically to permit the head of a re-entrant tenon of another toy building component to pass right through the aperture, the head of the re-entrant tenon being larger than the aperture, and so that the region can then spring back so that the aperture closely surrounds the neck of the re-entrant tenon.

2. A component as claimed in claim 1, in which the slot extends from the aperture and terminates in a further slot transverse thereto.

3. A component as claimed in claim 1

or claim 2, in which a second slot extends from the aperture and terminates in a further slot transverse thereto.

4. A component as claimed in claim 3, 5 in which the longitudinal axes of the two slots extending from the aperture are colinear.

5. A component as claimed in claim 3 or claim 4, in which each of the further 10 slots is formed at right-angles to its respective slot extending from the aperture.

6. A component as claimed in any one of claims 1 to 5, in which the periphery of the aperture is provided with corrugations 15 parallel to the axes of the aperture.

7. A component as claimed in any one of claims 1 to 6, in which the aperture is of circular cross-section.

8. A toy building set including first and 20 second building components, the first building component being as defined in any one of Claims 1 to 7 and the second building component having a re-entrant tenon which is insertable into the aperture of the first 25 building component to connect the two

components.

9. A set as claimed in Claim 8 when appendant to Claim 7, in which the tenon of the second building component is formed by a generally spherical head portion and a cylindrical neck portion. 30

10. A set as claimed in Claim 9 when appendant to Claim 6, in which the neck portion of the tenon of the second building component is formed with longitudinally extending corrugations. 35

11. A toy building component substantially as hereinbefore described with reference to, and as shown by, Figs. 1 and 2 or Fig. 3 of the accompanying drawings. 40

12. A toy building set substantially as hereinbefore described with reference to, and as shown by, Figs. 1 and 2 or Figs. 3 and 4 of the accompanying drawings.

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Fig. 1

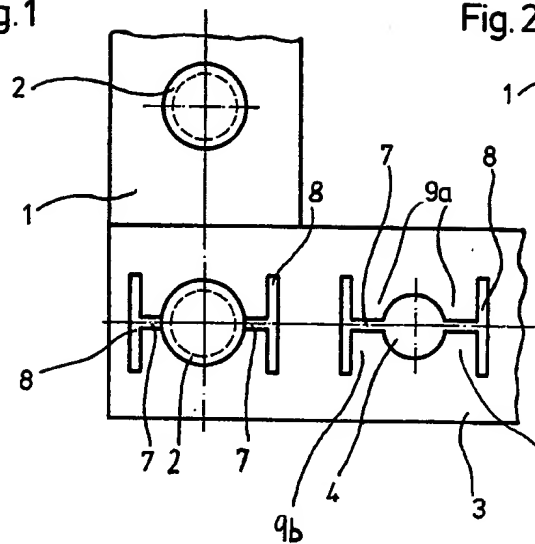


Fig. 2

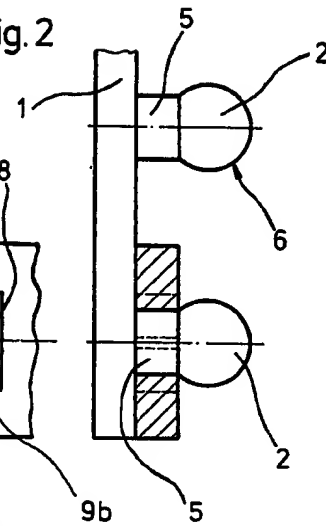


Fig. 3

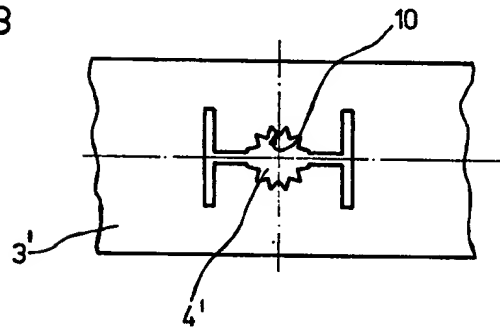


Fig. 4

